



# **Heat Recovery Systems**

Recovering Heat  
From Waste  
Water Streams



# Claremont Flock

- Claremont Flock is a Manufacturer of precision cut textile fibers with the ability to custom match, finish and dye to meet a wide array of customer needs



# Company History

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- Claremont Flock is 100% employee owned with operations in Europe and China and is headquartered in Leominster, Massachusetts
- Claremont Flock was started as Claremont Waste Manufacturing in 1915

# Background

- Claremont /Leominster
- Utilizes 250,000 Gallons of water daily
- 90% is heated to 150°F by means of a directly fired 18 million BTU natural gas heater
- Further heating is done by a 200H.P. steam boiler

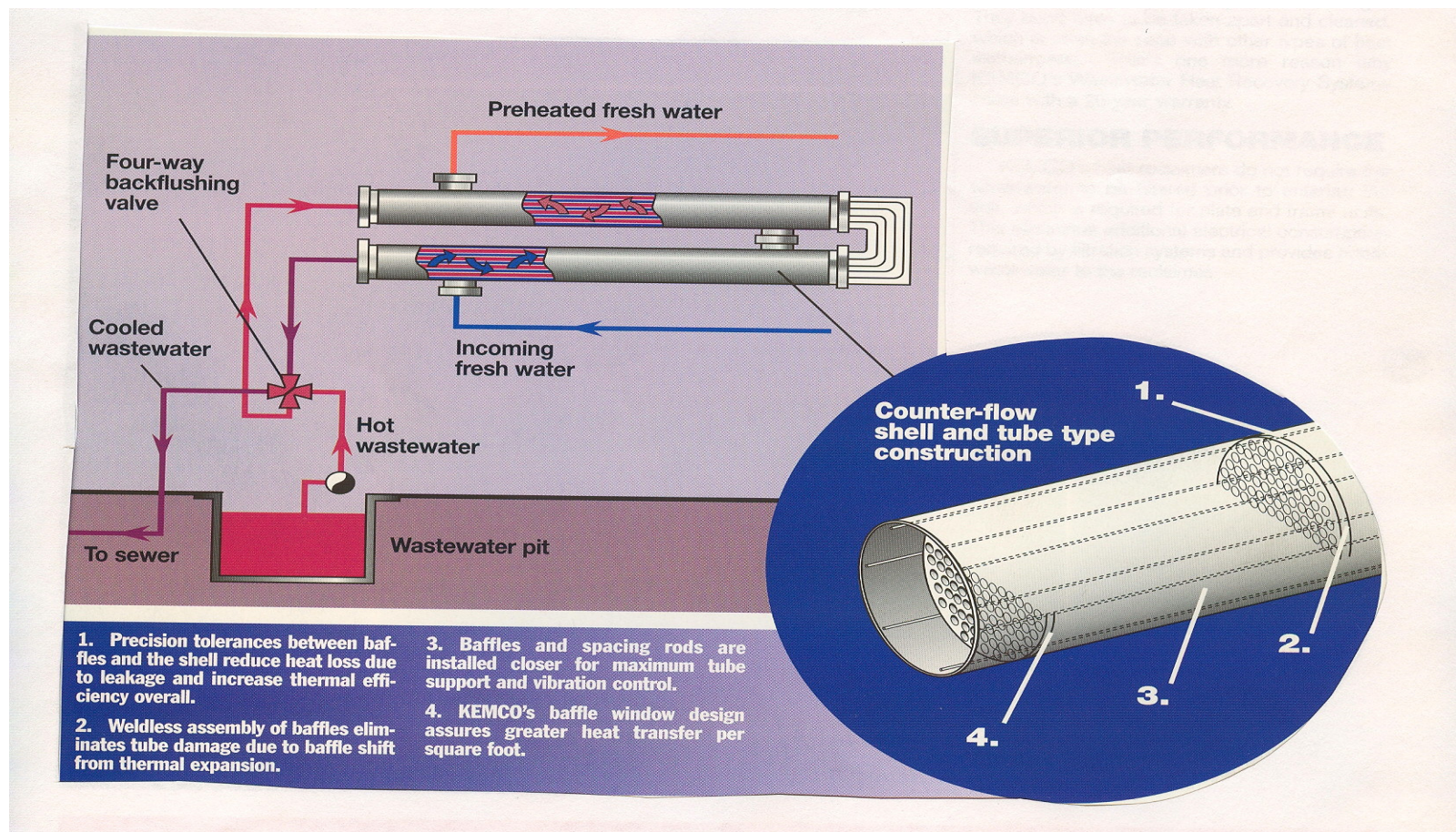
## Uses of Heated Water

- Washing Fibers (150°F-180°F)
- Rinsing Fibers (150°F+)
- Dyeing Fibers (200°F+)
- Chemical Mixing (150°F-180°F)

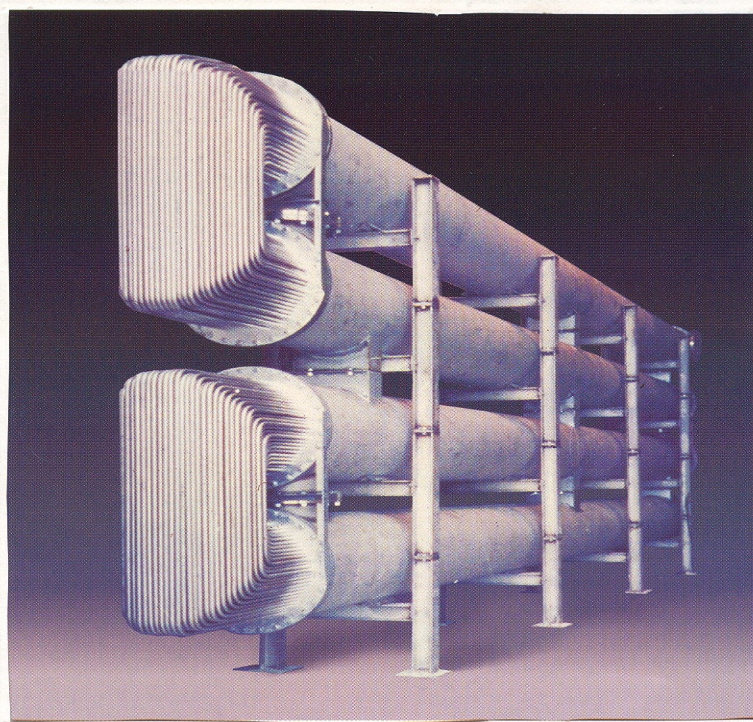
# Wastewater Streams

- Wastewater from cutting dyeing and finishing are collected in a central 11,000 gallon basin at 130°F
- Water is pre-screened to remove large solids
- Wastewater is then pumped through a 4-way anti-plugging valve and into the heat exchanger in a counter flow direction to incoming city water

# Diagram









## Streams, Continued

- Wastewater is discharged to the city at 56°F
- Incoming city varies from a low of 35°F to as high as 68°F from winter to summer
- Wastewater preheats the incoming city water prior to entering the hot water maker with an average 50°F incoming city water temp and an average preheat temp of 116°F

# Heat Exchanger Design

- Preheating 250 GPM of water from 35°F to 114°F when 270 GPM of 130°F wastewater passes through the unit in a counter flow direction
- Preheating 250 GPM of water from 50°F to 116°F is equivalent to 246 BHP
- Operating with 50°F average cold water 144 hours per week 50 weeks per year and natural gas costing \$9.00 per 1000cu/ft the recovered heat has a value of \$535,764